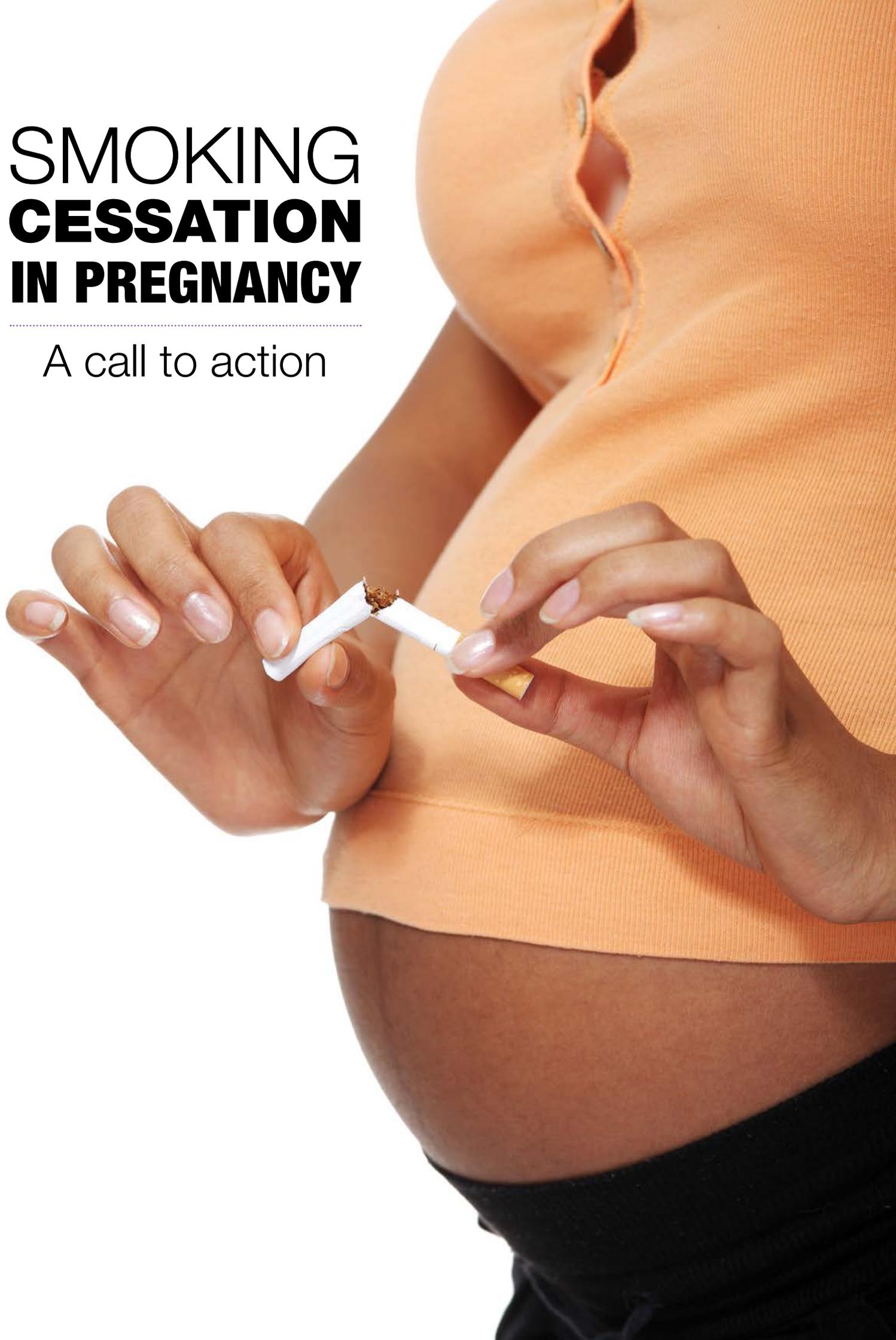


# SMOKING **CESSATION** **IN PREGNANCY**

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A call to action





## ORGANISATIONS ENDORSING THIS REPORT

- ASH, Action on Smoking and Health
- Community Practitioners and Health Visitors Association
- Faculty of Public Health
- FRESH Smoke Free North East
- Institute of Health Visiting
- National Centre for Smoking Cessation & Training
- NCT
- Royal College of Paediatrics and Child Health
- Royal College of Midwives
- Royal College of Nursing
- Royal Society for Public Health
- Sands – Stillbirth and neonatal death charity
- Smokefree South West
- The Lullaby Trust
- Tobacco Control Collaborating Centre
- Tobacco Free Futures
- Tommy's the Baby Charity
- UK Centre for Tobacco Control Studies

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## INTRODUCTION

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Smoking during pregnancy causes up to 2,200 premature births, 5,000 miscarriages and 300 perinatal deaths every year in the UK <sup>1</sup>. It also increases the risk of developing a number of respiratory conditions; attention and hyperactivity difficulties; learning difficulties; problems of the ear, nose and throat; obesity; and diabetes <sup>2,3,4,5,6,7,8,9,10,11</sup>.

As well as human costs, there are also financial ones. Treating mothers and their babies (0-12 months) with problems caused by smoking during pregnancy is estimated to cost the NHS between £20 million and £87.5 million each year <sup>12</sup>.

Given the damage that tobacco smoke can have on an unborn child, and the high associated costs to the NHS, it is critical that rates of smoking in pregnancy are reduced. Although rates are lower than in the past, over 12% of women in England are recorded as smoking at the time of delivery, which translates into over 83,000 infants born to smoking mothers each year. In some areas of England these rates are much higher: for example, in the North East, 20% of women are recorded as smoking at the time of delivery <sup>13</sup>.

Smoking rates not only vary by region but also by age and social group: pregnant women from unskilled occupation groups are five times more likely to smoke than professionals, and teenagers in England are six times more likely to smoke than older mothers. Infants born to smokers are much more likely to become smokers themselves <sup>14</sup>, which perpetuates cycles of health inequalities. The government's two priorities for public health are increasing healthy life expectancy and reducing inequalities <sup>15</sup>. In order to achieve this, giving every child the best start in life must be made a priority <sup>16</sup>, and this must include protecting babies from the damage of tobacco smoke, both before and after birth. This is recognised by the government, which has selected smoking at the time of delivery as one of the key indicators of success in the Public Health Outcomes Framework (2013).

The Tobacco Control Plan for England (2011) <sup>17</sup> sets out a national ambition to reduce smoking as recorded at the time of delivery to 11% or less by the end of 2015. If rates continue to fall at levels seen over the last six years, this ambition will not be achieved.

In March 2012, we were challenged by the previous public health minister to identify ways to make further progress in this area. Since then, we have co-chaired a series of meetings with a range of professionals (see Appendix 1) to explore the issue and have developed a series of recommendations that are outlined in this report. As part of these meetings, a number of examples of current practice were presented to the group and these are also included in the report. In addition to this, we have undertaken new work to influence current practice. This includes the development of resources to make it easier for midwives and mothers to talk about the benefits of Carbon Monoxide (CO) screening, the dangers of smoking during pregnancy and the benefits of quitting.

NICE has produced national guidance on how best to support women to stop smoking in pregnancy <sup>18</sup> and it is in the process of producing guidance on smoking cessation in maternity care settings. As part of the work undertaken by the group, we have reviewed NICE's existing recommendations and considered how we can help these to be implemented more effectively. In addition to this, we have explored how we can improve collection of data on smoking in pregnancy, commissioning of services, training, and communication with health professionals and the public; as all of these provide opportunities to better support women to quit.

Reducing smoking in pregnancy is not always easy, as there are obstacles that face both women and the professionals who support them. Many women will quit as soon as they discover they are pregnant. For others, their understanding of the risk posed to their unborn baby may not be sufficient to motivate them to

quit; or they may face significant barriers that prevent them from stopping<sup>19</sup>. Midwives and other professionals working with pregnant women can also face significant obstacles: not all receive appropriate time, training and tools; and IT systems, referral pathways and communication mechanisms can be insufficient. In addition to this, although there is good evidence that intensive and on-going behavioural support is effective in helping pregnant smokers to quit, the interventions with the best evidence of success, including incentives, are not always put into practice. This means that while initial support may be successful in helping a woman to stop, the lack of on-going support may mean that she relapses. Against this backdrop of challenges, changes in the way that services are commissioned locally pose a further threat to making progress. However, these barriers can be overcome. This report provides recommendations on how this can be achieved; highlighting that by working together we can make changes that will give thousands of babies a much better start in life.



**Francine Bates**

Chief Executive, The Lullaby Trust (formerly the Foundation for the Study of Infant Deaths)



**Linda Bauld**

Professor of Health Policy, University of Stirling

## SUMMARY OF RECOMMENDATIONS

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This report outlines recommendations for commissioners, providers, royal colleges, government bodies, training organisations and third sector organisations specifying what action is required in order to reduce the prevalence of smoking during pregnancy.

The recommendations have been categorised into six themes: data improvement; implementation of NICE guidance; training; communication between professionals; communication with the public; and research needs. These are outlined below, with background information and examples of local practice in the main body of the report.

### **Data collection**

1. NHS England should require that data on smoking status, collected at booking visit and throughout pregnancy, is recorded accurately and validated using CO screening. Clinical commissioning groups (CCGs) should include this requirement in service specifications.
2. NHS England should consider whether continuing to collect Smoking at Time Of Delivery (SATOD) data is the best way of measuring smoking in pregnancy. An alternative would be to require trusts to collect smoking status at approximately 36 weeks gestation, validating this through CO screening. The feasibility of this should be explored. If this change is made, it should be introduced during a period when SATOD is still collected, to allow trends to continue to be examined and a comparison between the two measures to be made. This overlapping period should ideally be over three years.
3. NHS England should work with Public Health England and the Health and Social Care Information Centre to produce a briefing document, outlining best practice for collecting the new maternity and children's data set. This should include how the data should be collected; when it should be collected; who should collect it; where it should be submitted to; and how it should be used locally.
4. Once data collection is of a consistent and high standard across trusts, NHS England and CCGs should identify trusts with high or unchanging rates of smoking in pregnancy and support them to take action to reduce prevalence.
5. Clinical/medical directors should ensure that systems are in place to facilitate the collection and recording of CO readings during antenatal appointments. In addition to ensuring there is adequate time in the appointment, and that midwives are trained and equipped, they should ensure that there is space to record CO readings in women's pregnancy notes at each appointment.
6. The Health and Social Care Information Centre should provide aggregated SATOD data at NHS trust level, to enable trusts to benchmark themselves against one another. This could be achieved using the maternity and children's data set.

### **Implementing NICE guidance**

Audit and implementation of guidelines:

1. NHS England, in partnership with NICE, should commission an audit to investigate the extent to which the NICE guidance has been implemented locally and support areas found not to have acted on the recommendations. This should build on recent research by the University of Nottingham on the structure and extent of smoking cessation in pregnancy services in England <sup>20</sup>.

2. Government organisations (including the Department of Health, NHS England and Public Health England), relevant royal colleges and baby and parenting charities should coordinate a programme of work to promote and endorse the NICE guidance.
3. There should be commitment from senior staff at a local level to ensure that the NICE guidance is fully implemented and that all relevant partners (midwives, relevant doctors, nurses, administration staff, pharmacists and those working in the voluntary/community sector) are engaged with the guidance. Senior staff includes directors of public health, heads of midwifery, clinical/medical directors and trust chief executives.

### Identifying and referring smokers:

4. CCGs and local authorities should work in partnership to ensure that there is an effective and robust referral pathway for pregnant smokers.
5. Providers (clinical/medical directors, finance managers and heads of midwifery) should ensure that CO monitors are provided for all midwives and that clear procedures are in place for training of staff and for the regular calibration of the CO monitors.
6. CCGs should include a requirement in service specifications that midwives discuss smoking status at booking with all women and that all women are screened for CO. Midwives should give very brief advice on cessation to identified smokers and promptly refer a minimum of 90% of those with a CO score of 4 or higher to local stop smoking services<sup>21</sup>. CO screening should be done in the first booking visit and throughout a woman's pregnancy. Providers should ensure that midwives are given the time, training and tools to do this; and should develop procedures to performance manage the process.
7. Health and wellbeing boards should ensure that those responsible for providing health and support services for pregnant women and young families (including primary care, local authority teams and community/voluntary organisations) are sufficiently equipped to enable them to identify smokers, raise awareness of the benefits of stopping, and offer referrals to local stop smoking services. They should also be supported to raise awareness of the dangers of secondhand smoke, identify partners and household members who smoke and advise that they receive support to quit from a local stop smoking service.

### Local stop smoking services:

8. Local authority commissioners and stop smoking services should ensure that there is sufficient expertise available to meet the needs of all pregnant smokers. Women should be involved in the development of services, and health and wellbeing boards should review whether their needs are being met as part of the joint strategic need assessment.
9. Local authority commissioners should include a requirement in service specifications that all women are phoned by the local stop smoking service within one working day (24 hours) of receiving a referral and seen within one week.
10. Local stop smoking services should offer intensive support programmes for pregnant smokers up to the point of delivery and up to two months post-partum (or longer if appropriate to prevent relapse). This intervention should be provided by trained staff and be adequately resourced by local authority commissioners.
11. Local authorities and the NHS should follow the NICE smoking in pregnancy guidance on NRT provision, taking into account the update to the NICE guidance which is expected by 2014.

## Training

1. There should be implementation of the NICE guidance: all midwives, and other health professionals working with women who smoke while pregnant, should have training on smoking cessation that is appropriate to their role. This is the responsibility of maternity service managers, commissioners of stop smoking services and relevant professional bodies and organisations.
2. The Nursing and Midwifery Council should specify that mandatory education on smoking in pregnancy and brief intervention training for all midwives be provided as part of their pre-registration training and continued professional development.
3. To ensure that midwives are competent in discussing smoking with women and delivering CO screening, Health Education England should ensure that all midwives and maternity support workers undertake regular training and are adequately resourced to equip themselves to raise the issue of smoking with women.
4. Health Education England should ensure that all practitioners who assist pregnant women to stop smoking are provided with appropriate evidence-based training resources that allow them to address the core competencies required in providing effective smoking cessation advice.
5. Local commissioners should ensure that all practitioners who assist pregnant women to stop smoking are sufficiently trained, achieving full NCSCT certification and completing the NCSCT specialty pregnancy online module, or training to an equivalent standard. There should also be mandatory targets for the numbers of staff trained to this level.
6. Brief intervention training should be undertaken by doctors, nurses, health visitors, administration staff, sonographers and other medical practitioners who work with pregnant women. Medical royal colleges, Health Education England, the National Centre for Smoking Cessation and Training, service managers and voluntary organisations – among others – have a role to play in promoting the uptake of this training.
7. Training courses are not enough. Service managers should ensure that there are good role models available to support colleagues through support and supervision. Less experienced staff can learn through mentoring, gaining experience in how to talk to women and interpreting different CO readings.

## Communication between health professionals

1. Public Health England should identify a senior officer to champion efforts to reduce smoking in pregnancy, working across sectors to ensure that every opportunity to tackle smoking in pregnancy is taken.
2. Health and wellbeing boards should prioritise reducing the prevalence of smoking during pregnancy, ensuring that there are clear and streamlined pathways in place to identify and support pregnant smokers, and that services meet the needs of the local population.
3. Public Health England should work with royal colleges (including the Royal College of Midwives, the Royal College of Nursing and the Royal College of Obstetricians and Gynaecologists) and other professional organisations to ensure that there are national mechanisms in place to enable professionals to offer one another support and share good practice in reducing smoking in pregnancy.
4. Stop smoking services should develop close working links and cross referral pathways with third sector organisations at community level who provide on-going support and advice to young families and young women.
5. The Smokefree Action Coalition<sup>22</sup> should consider how it can encourage action to reduce smoking in pregnancy.

6. The CLearR<sup>23</sup> partnership should review items in the CLearR model to ensure that smoking in pregnancy is considered comprehensively across local government services and policy.
7. Offices of tobacco control, where they exist, should continue to support their region to reduce smoking in pregnancy levels by developing protocols, encouraging partnership working and sharing good practice.
8. The National Screening Committee should consider CO screening as part of its antenatal screening programme.

## **Communication with the public**

1. Member organisations of the challenge group, in partnership with the Department of Health and Public Health England, should agree a consistent set of messages to inform professional bodies, parents, training providers, and other members of the voluntary sector on the key issues in smoking in pregnancy. The baby and parenting charities, with support from challenge group member organisations, should take a lead on producing and disseminating these messages.
2. The importance of CO screening should be communicated both to pregnant women and professionals, particularly midwives, through the development of two new resources outlining the dangers of CO. These two resources, comprising postcard size leaflets (one for women and one for professionals), should describe what different CO readings mean and what to do in the event of an abnormal reading. As part of the challenge group the Lullaby Trust, Tommy's, the Royal College of Nursing and the Royal College of Midwives have already taken a lead on their development.
3. Public Health England should build and expand upon the Start4Life brand, ensuring that all pregnant women are aware of the risks of smoking in pregnancy, the benefits of quitting, the support available to help them quit, and the importance of CO screening.
4. England needs a comprehensive, multi-agency, communications strategy to highlight the importance of stopping smoking in pregnancy, aimed at all women and their partners, as well as other members of the household. This should be developed by challenge group member organisations in conjunction with Public Health England. The strategy needs to make the best use of existing resources and, if necessary, make the case for additional funding.
5. Digital interventions should be part of the development of future communication strategies for women who smoke during pregnancy to ensure the most effective (and cost-effective) interventions are in place across England.
6. Where there is strong evidence to support an effective intervention, this should be commissioned and implemented. For example, there is good evidence that incentive reward schemes are effective in supporting women to maintain a smokefree pregnancy. This is the responsibility of Clinical Commissioning Groups, Local Authorities and local stop smoking services.
7. Where it is known that a woman is trying to conceive, health professionals and others who have contact with her should identify the woman's smoking status, offer very brief advice if she smokes, and refer her to stop smoking services.

## Research needs

A number of research needs have been identified. These include:

- Research on Nicotine Replacement Therapy (NRT) use in pregnancy, including: safety and efficacy particularly of higher doses – i.e. combination therapy; greater understanding of how pregnant smokers use NRT and why adherence is low; and the development of effective interventions to increase adherence.
- Research to better understand behaviour change techniques for smoking cessation in pregnancy, particularly which types of these techniques are effective among different groups.
- Studies examining the effectiveness of different referral methods from maternity services to stop smoking services, building on research already undertaken in the UK.
- Studies focussing on teenage pregnant women and effective mechanisms to engage and support this group to stop smoking.
- Further research and pragmatic pilots on financial incentives for smoking cessation in pregnancy, including incentives with partners and social support network members, and incentives for health care providers including midwives to promote referral and provision of treatment.
- Research on cessation of smokeless tobacco products in pregnancy particularly in Black and Minority Ethnic groups.
- Studies on electronic aids for smoking cessation in pregnancy and new media interventions.
- Monitoring or audit work on a range of measurement issues related to smoking in pregnancy including, for example: the reliability of self report, pragmatic approaches to cotinine testing in clinical settings and whether the definition of low birth weight (<2.5kgs) in developed countries such as the UK should be raised.
- Research on effective interventions for partner and household members' smoking cessation.
- Further research on self-help interventions for cessation in pregnancy including: the best content for high quality written self-help materials; the optimisation of self-help digital interventions; and mechanisms to improve uptake of self-help interventions.
- Development and testing of relapse prevention interventions for smoking cessation in pregnancy, including behavioural support and NRT specifically for relapse prevention.

## WHAT THE DATA TELL US

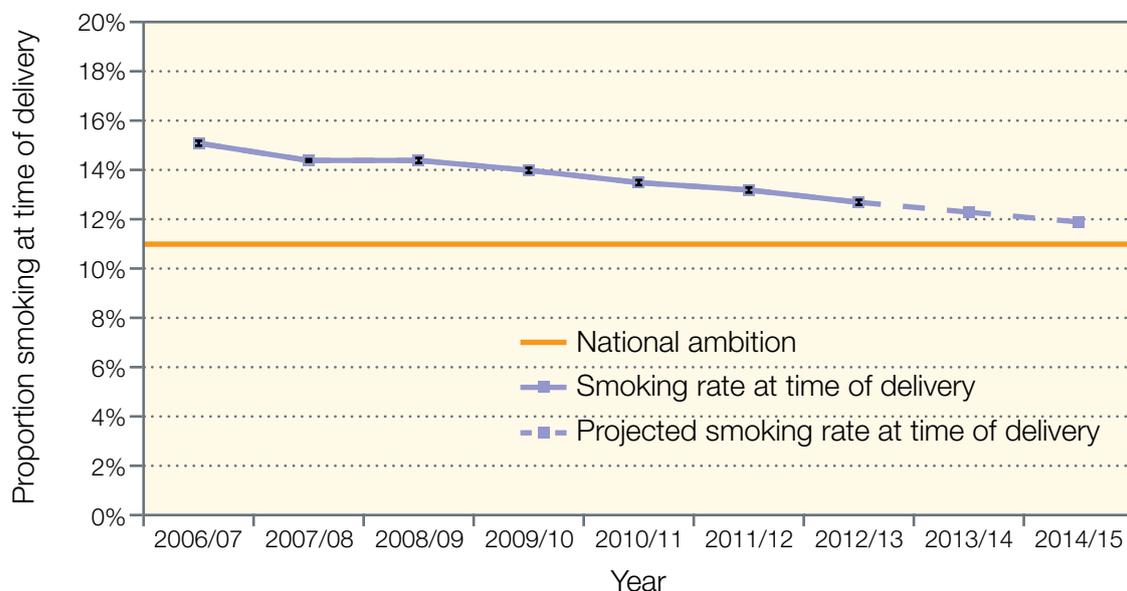
There are two main data sources that provide information on the prevalence of smoking in pregnancy in England: Smoking At Time of Delivery (SATOD) and the Infant Feeding Survey (IFS).

SATOD data have been collected from primary care trusts quarterly by the Health and Social Care Information Centre and are used to measure progress against the national ambition to reduce maternal smoking prevalence to 11% or less by the end of 2015<sup>24</sup>. In order to collect these data, health professionals in maternity units are required to record the smoking status of every woman at the time of delivery; exactly how and when this is done, and how well it is done, varies among trusts. Although SATOD data has been collected since 2003, it has not always passed the data quality checks undertaken by the Health and Social Care Information Centre and, for this reason, data presented in this report is from 2006/7 onwards.

The IFS is a UK wide retrospective survey that is undertaken every five years and includes information on self-reported maternal smoking behaviour, involving a sample of women who have registered live births during a particular time period. Data from 2000 onwards is presented in this report<sup>25, 26</sup>.

Both of these data sources show that reported rates of smoking in pregnancy in England have fallen over time. Figure 1 presents the latest results from the SATOD dataset, showing a fairly steady decline in the proportion of women recorded as smoking at the time of delivery in recent years, with a significant fall from 15.1% in 2006/7 to 12.7% in 2012/13. However, rates are not falling fast enough: if they continue to fall at similar levels to those seen over the last six years, the government will not achieve their ambition of reducing maternal smoking prevalence to 11% or less by the end of 2015.

**Figure 1.** Smoking rates at the time of delivery, England, 2006/7 - 2012/13



Source: NHS Information Centre for Health and Social Care (2013)

The IFS reflects a similar picture (Figure 2), showing that both the proportion of women reporting to have smoked in the year before/during pregnancy, and the proportion of women reporting to have smoked throughout pregnancy<sup>27</sup>, has fallen significantly since 2000. This can be attributed to the declining rates of smoking in the general population<sup>28</sup> and the increase in the proportion of women giving up smoking in the year before or during pregnancy, which increased from 45% in 2000 to 55% in 2010.

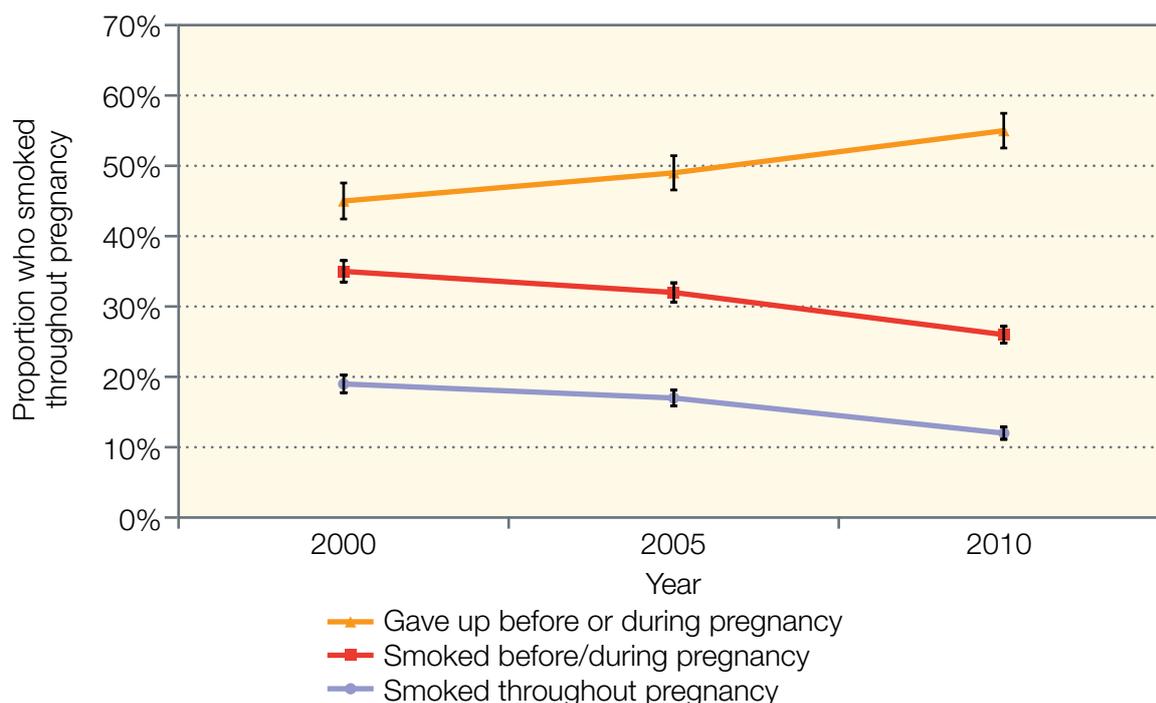
Although it is positive that both sources show that smoking prevalence among pregnant women is falling, it is important to note that they are both likely to underestimate the true number of pregnant smokers in England. This is due to women under-reporting smoking behaviour<sup>29,30</sup> and incomplete or incorrect completion of data collection forms by midwives or other professionals. In addition to this, prevalence may be under-estimated further due to the fact that women who miscarry, or have a stillbirth, are not included in the data sets; missing an important category of women where smoking may have contributed to their pregnancy loss.

Despite these limitations, both datasets provide a useful way to monitor whether initiatives to reduce smoking in pregnancy, both across the whole population and in specific groups, have made a difference. While these data shows that reported smoking in pregnancy rates have fallen across the country, they also highlight that significant differences between different regions, ages and social classes remain.

Figure 3, for example, shows that many more primary care trusts in the North of England recorded over 13.6% of mothers smoking at the time of delivery in 2012/13, compared to in the South where rates were lower. Similarly, Figure 4 shows that although reported rates of smoking at the time of delivery fell significantly in all but one region (East Midlands) between 2007/8 and 2012/13, the gap between some regions has not shifted: for example, the North East continues to have the highest reported rates of smoking at time of delivery (19.7% in 2012/13), and London continues to have the lowest (5.7% in 2012/13).

There are also marked differences between different ages and socio-economic groups, highlighted by the IFS. For example, Figure 5 shows that teenagers in England were six times more likely than older mothers<sup>i</sup> to have reported smoking throughout their pregnancy in 2010, and are the only age group where smoking rates have not fallen significantly since 2000. However, promisingly, if rates continue to fall at similar levels to those

**Figure 2.** Smoking rates before and during pregnancy, smoking rates throughout pregnancy, and cessation rates over time, Infant Feeding Survey, 2000 – 2010

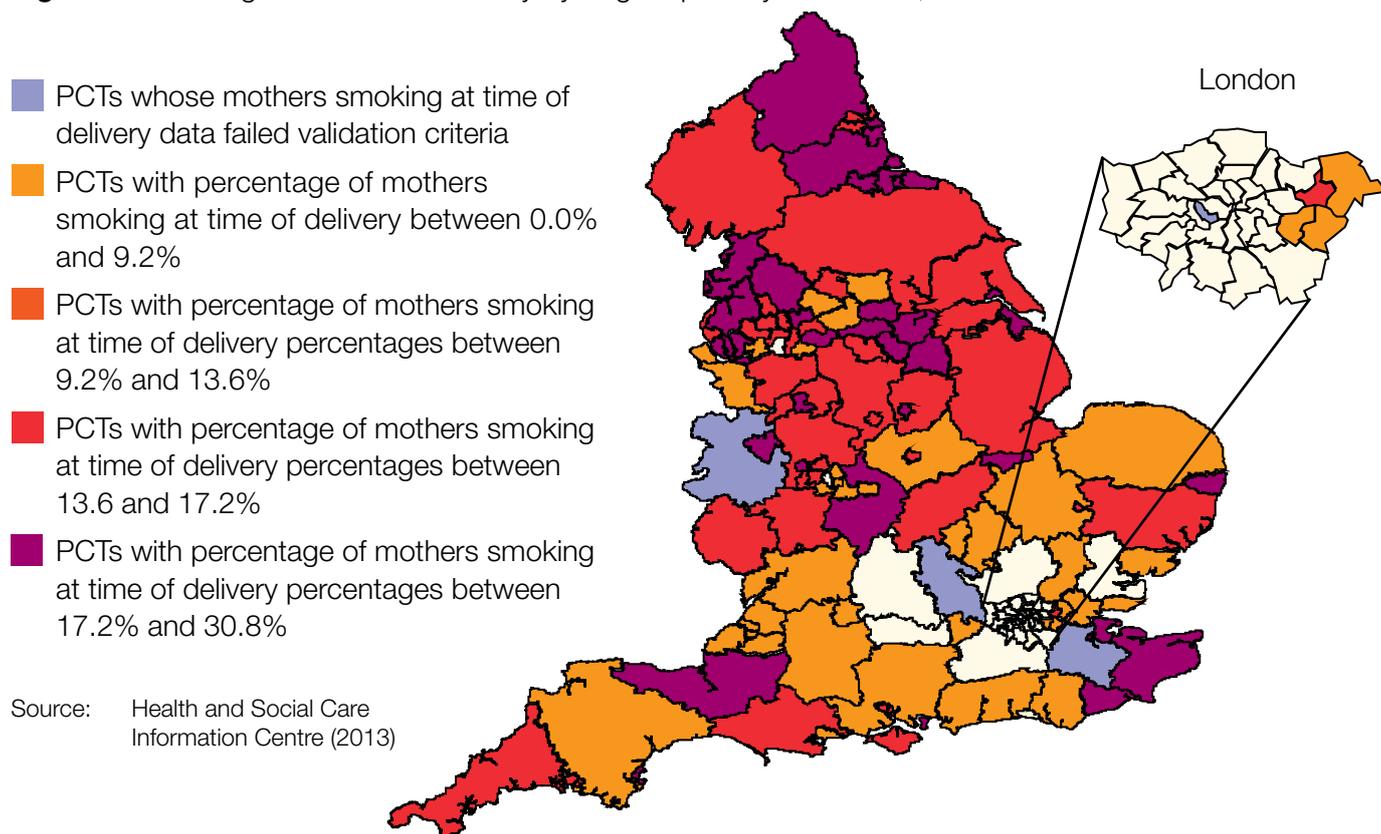


Sources: NHS Information Centre for Health and Social Care (2010); Hamlyn B. et al, Infant Feeding 2000 (2002)  
Reference i. 35 years and older

seen in the last five years (2005-2010), there will be less of a difference between the smoking behaviours of the oldest and youngest mothers in the future.

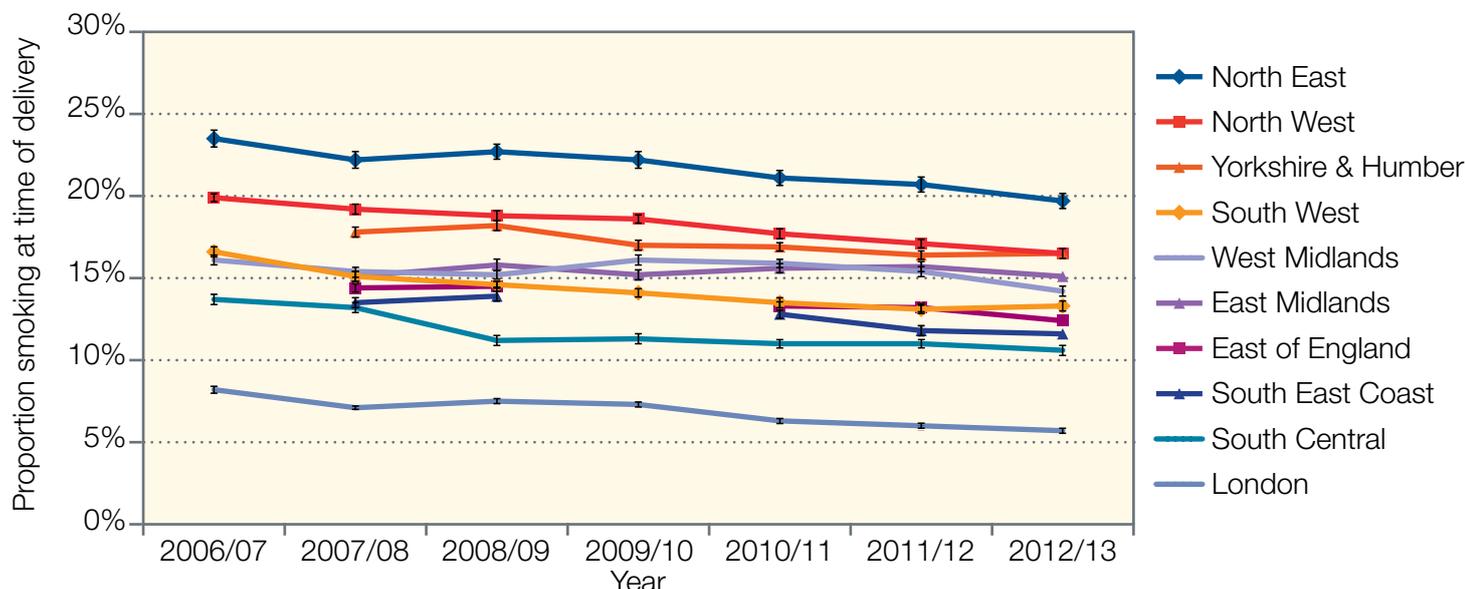
Figure 6 shows smoking behaviour between different socio-economic groups; again highlighting stark differences. For example, in 2010, routine and manual groups were five times more likely than managerial and professional groups to have reported smoking throughout their pregnancy. Although smoking rates have fallen significantly in both of these groups since 2000, there is evidently a long way to go before this gap is closed.

**Figure 3.** Smoking at the time of delivery by English primary care trusts, 2012/13



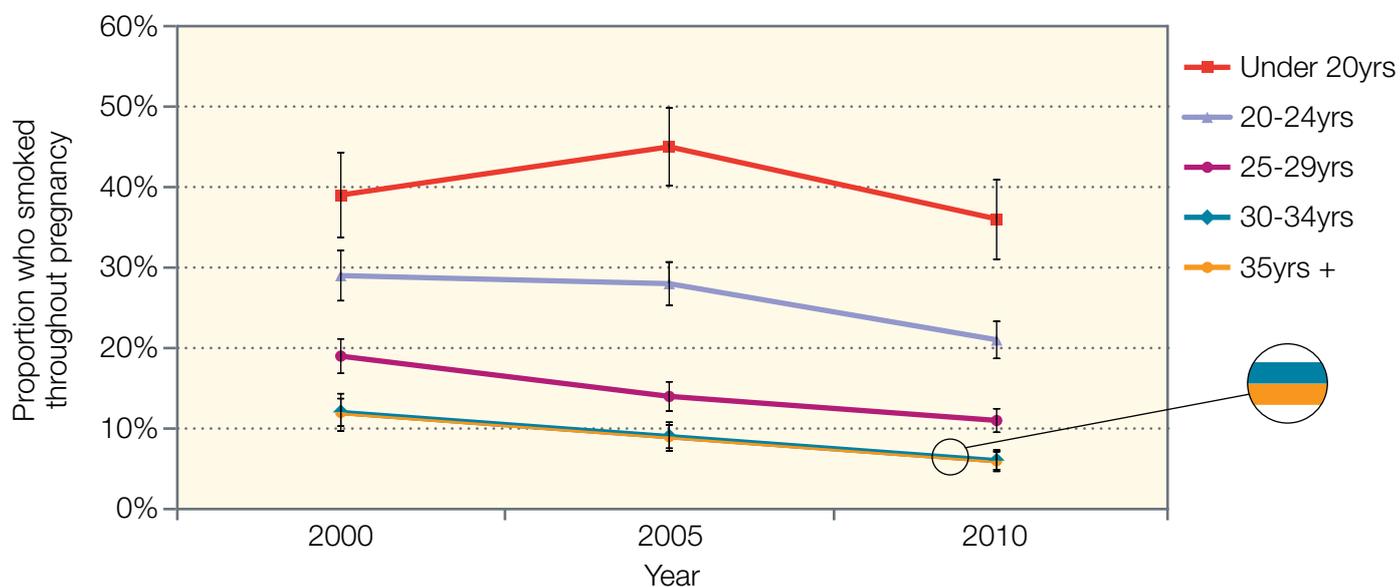
Source: Health and Social Care Information Centre (2013)

**Figure 4.** Smoking rates at the time of delivery by English region, 2012/13<sup>ii</sup>



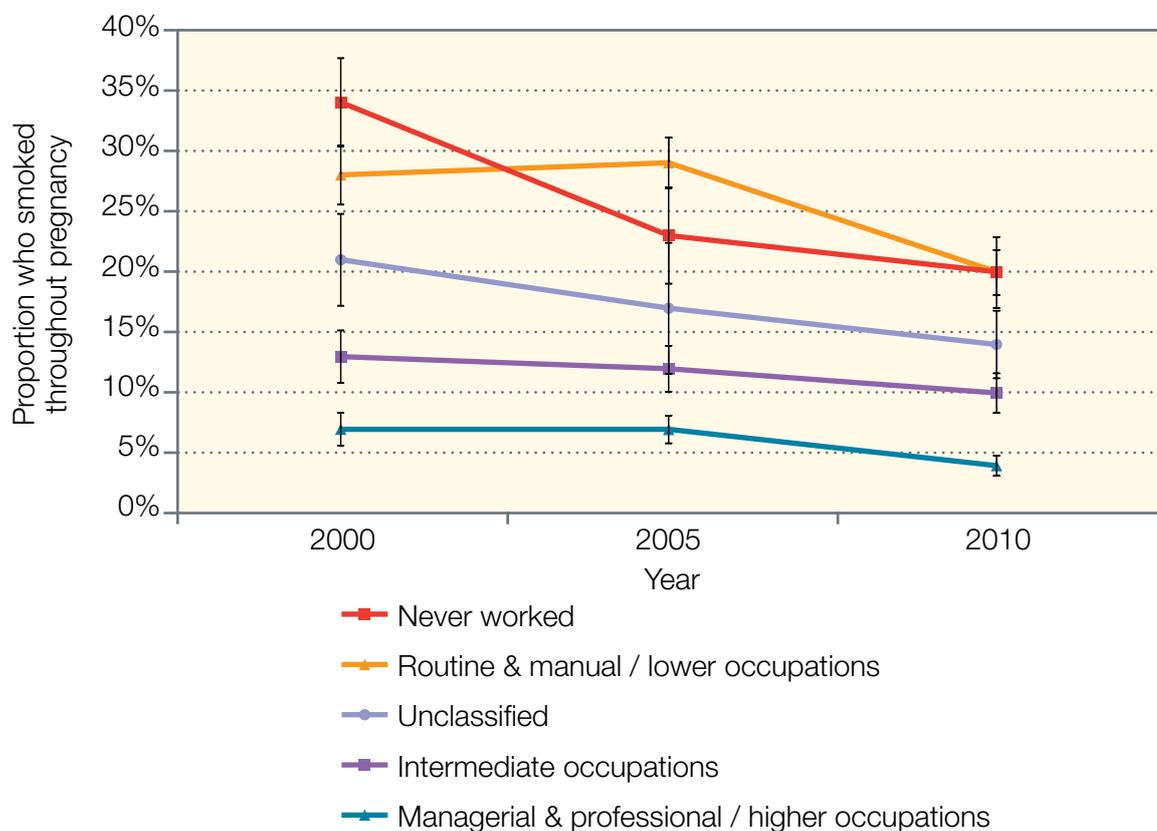
Sources: NHS Information Centre for Health and Social Care (2013)  
Reference ii. Blank data points mean that data did not meet the Health and Social Care Information Centre's validation criteria.

**Figure 5.** Smoking rates throughout pregnancy by age, England, 2010



Sources: NHS Information Centre for Health and Social Care (2010); Hamlyn B. et al, Infant Feeding 2000 (2002)

**Figure 6.** Smoking rates throughout pregnancy by type of job, England, 2010<sup>iii</sup>



Sources: NHS Information Centre for Health and Social Care (2010); Hamlyn B. et al, Infant Feeding 2000 (2002)

Reference iii. In 2000, the IFS refers to the categories as 'higher occupations' instead of 'managerial & professional' and 'lower occupations' instead of 'routine and manual'

## DATA COLLECTION

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### Background

Collecting data on the number of women smoking at the time of delivery (SATOD) has been a requirement of all primary care trusts in England. However, as outlined in Chapter 1, the accuracy and completeness of this data varies<sup>31</sup>, with many trusts relying on self-reported smoking status, sometimes recorded months before the birth. This not only brings into doubt the validity of the data but also highlights that many trusts are not implementing the NICE guidance on smoking in pregnancy. This guidance recommends that smoking status is collected and recorded, through discussion and CO screening, at first maternity booking and subsequent appointments. CO screening is not only used to validate smoking status but is an important tool in identifying exposure to secondhand smoke and other sources of CO (such as through faulty gas appliances). Without this action, opportunities are not only missed to raise the issue of smoking and refer pregnant smokers to stop smoking services, but trusts are unable to monitor the impact they are having on reducing smoking in pregnancy rates.

NHS England is currently developing a new maternity and children's data set, which will be implemented across all NHS-commissioned maternity services in England from later this year. In addition to collecting smoking status at the end of pregnancy, there will be a new requirement of NHS trusts to also collect smoking status at time of booking, along with the number of cigarettes that women smoke per day.

In order to improve current practice, a number of actions are needed:

### Recommendations

1. NHS England should require that data on smoking status, collected at booking visit and throughout pregnancy, is recorded accurately and validated using CO screening. Clinical commissioning groups (CCGs) should include this requirement in service specifications.
2. NHS England should consider whether continuing to collect SATOD data is the best way of measuring smoking in pregnancy. An alternative would be to require trusts to collect smoking status at approximately 36 weeks gestation, validating this through CO screening. The feasibility of this should be explored. If this change is made, it should be introduced during a period when SATOD is still collected, to allow trends to continue to be examined and a comparison between the two measures to be made. This overlapping period should ideally be over three years.
3. NHS England should work with Public Health England and the Health and Social Care Information Centre to produce a briefing document, outlining best practice for collecting the new maternity and children's data set. This should include how the data should be collected; when it should be collected; who should collect it; where it should be submitted to; and how it should be used locally.
4. Once data collection is of a consistent and high standard across trusts, NHS England and CCGs should identify trusts with high or unchanging rates of smoking in pregnancy and support them to take action to reduce prevalence.
5. Clinical/medical directors should ensure that systems are in place to facilitate the collection and recording of CO readings during antenatal appointments. In addition to ensuring there is adequate time in the appointment, and that midwives are trained and equipped, they should ensure that there is space to record CO readings in women's pregnancy notes at each appointment.
6. The Health and Social Care Information Centre should provide aggregated SATOD data at NHS trust level, to enable trusts to benchmark themselves against one another. This could be achieved using the maternity and children's data set.

## BLACKPOOL :

### **Investigating and improving the validity and reliability of Smoking At Time Of Delivery data**

Smoking At Time Of Delivery (SATOD) is considerably higher in Blackpool (30.8% 2012/13) compared to the North West (16.4% 2012/13) and the England average (12.7% 2012/13).

In order to assess and improve the validity of SATOD data, NHS Blackpool implemented a validation process which included:

- Weekly performance meetings;
- Incentive schemes;
- Focus groups and interviews with midwifery staff and pregnant women;
- Ethnographic research;
- Confirmatory contact with women post-discharge;
- Auditing handwritten clinical records, and a review of local maternity practice.

Following the validation process it became evident that there were several issues which were influencing the validity of the SATOD data and adherence to NICE guidance, including:

- Service providers did not consider SATOD as a priority target, compared to other competing targets.
- Some believed that smoking during pregnancy was such a big issue that nothing could be done about it.
- Some midwives reported finding it difficult to discuss smoking with women.
- Not all pregnant women accurately reported their smoking status.

Following this work, CO screening was implemented and is now routinely carried out in Blackpool on all pregnant women at their booking appointment and at 36+ weeks gestation. Midwives record individual CO screening results electronically and are unable to proceed through the electronic recording system until the CO result is entered. Women identified as smoking tobacco at booking are automatically referred to the local stop smoking service unless they choose to opt out.

Screening for CO enables service providers to have a greater understanding of pregnant women's health and wellbeing needs, and allows them to put in place additional support and interventions as required. Screening at 36+ weeks gestation has been found to be a valid and reliable measure of smoking during pregnancy, far more reliable than asking at time of delivery. The fact that all pregnant women are screened at booking visit and at 36 + weeks' gestation also enables the service to assess how many identified pregnant smokers go on to quit.

## IMPLEMENTING NICE GUIDANCE

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### Background

In 2010, NICE published guidance on 'quitting smoking in pregnancy and following childbirth'<sup>32</sup>, with recommendations on how pregnant smokers and their household members should be identified and referred; what support they should be offered to help them quit; and the training that professionals working with this group should receive.

The guidance highlights the key role that midwives have in identifying and referring pregnant smokers, recommending that they use discussion and CO screening to assess exposure to tobacco smoke; and refer all identified and recent smokers to local stop smoking services. Some midwives have expressed concern about the implications of CO screening at the booking visit. However, in areas where they have put in place appropriate systems, routine CO screening for all pregnant women at booking visit has not been a problem.

The NICE guidance recognises the role that all professionals providing health and support services for pregnant women have, advising they use any meeting with this group to identify smokers and refer them. Specific recommendations are also made for stop smoking services, including when and how they should contact women who have been referred, and what support they should offer. Alongside behavioural interventions, the guidance recommends that the use of Nicotine Replacement Therapy (NRT) is considered for women who find it difficult to stop smoking without this support.

In addition to this existing guidance, new NICE guidance on smoking cessation in acute, maternity and mental health services has recently been published in draft form for consultation. This guidance reinforces the existing recommendations on smoking cessation in pregnancy, emphasising the importance of identifying and referring smokers; providing advice to smoking household members; and ensuring staff are adequately trained. In addition to this, it recommends that a clinical or medical director is assigned to lead on stop smoking interventions in secondary care; commissioners take responsibility for ensuring the guidance is fully implemented; and secondary care services introduce smokefree policies (including smokefree grounds and staff contracts not allowing smoking during work time, on the secondary care estate or in uniform).

Despite the 2010 NICE smoking in pregnancy guidance being in place for three years, implementation remains patchy<sup>33</sup>. If the proportion of women smoking during pregnancy is to reduce, it is critical that action is taken to ensure that both the existing and new guidance are implemented consistently in every local area.

In order to improve compliance with NICE guidance, we need to understand why the current guidance has not been implemented consistently and also learn from areas where implementation has been achieved. Examples of two areas which have implemented CO screening are Dudley and across the Heart of England Foundation Trust: their experiences are shared on pages 19-21.

Key recommendations to improve the implementation of NICE guidance on smoking in pregnancy are set out below.

### Recommendations

Audit and implementation of guidelines:

1. NHS England, in partnership with NICE, should commission an audit to investigate the extent to which the NICE guidance has been implemented locally and support areas found not to have acted on the recommendations. This should build on recent research by the University of Nottingham on the structure and extent of smoking cessation in pregnancy services in England<sup>34</sup>.

2. Government organisations (including the Department of Health, NHS England and Public Health England), relevant royal colleges and baby and parenting charities should coordinate a programme of work to promote and endorse the NICE guidance.
3. There should be commitment from senior staff at a local level to ensure that the NICE guidance is fully implemented and that all relevant partners (midwives, relevant doctors, nurses, administration staff, pharmacists and those working in the voluntary/community sector) are engaged with the guidance. Senior staff includes directors of public health, heads of midwifery, clinical/medical directors and trust chief executives.

### Identifying and referring smokers:

4. CCGs and local authorities should work in partnership to ensure that there is an effective and robust referral pathway for pregnant smokers.
5. Providers (clinical/medical directors, finance managers and heads of midwifery) should ensure that CO monitors are provided for midwifery staff, to enable routine CO screening during pregnancy, and that clear procedures are in place for the training of staff and for the regular calibration of the CO monitors where needed.
6. CO screening should be part of routine care. CCGs should include a requirement in service specifications that midwives discuss smoking status at booking with all women and that all women are screened for CO. Midwives should give very brief advice on cessation to identified smokers and promptly refer a minimum of 90% of those with a CO score of 4 or higher to local stop smoking services<sup>35</sup>. CO screening should be done in the first booking visit and throughout a woman's pregnancy. Providers should ensure that midwives are given the time, training and tools to do this; and should develop procedures to performance manage the process.
7. Health and wellbeing boards should ensure that those responsible for providing health and support services for pregnant women and young families (including primary care, local authority teams and community/voluntary organisations) are sufficiently equipped to enable them to identify smokers, raise awareness of the benefits of stopping, and offer referrals to local stop smoking services. They should also be supported to raise awareness of the dangers of secondhand smoke, identify partners and household members who smoke and advise that they receive support to quit from a local stop smoking service.

### Local stop smoking services:

8. Local authority commissioners and stop smoking services should ensure that there is sufficient expertise available to meet the needs of all pregnant smokers. Women should be involved in the development of services, and health and wellbeing boards should review whether their needs are being met as part of the joint strategic need assessment.
9. Local authority commissioners should include a requirement in service specifications that all women are phoned by the local stop smoking service within one working day (24 hours) of receiving a referral and seen within one week.
10. Local stop smoking services should offer intensive support programmes for pregnant smokers up to the point of delivery and up to two months post-partum (or longer if appropriate to prevent relapse). This intervention should be provided by trained staff and be adequately resourced by local authority commissioners.
11. Local authorities and the NHS should follow the NICE smoking in pregnancy guidance on NRT provision, taking into account the update to the NICE guidance which is expected by 2014.

## HEART OF ENGLAND FOUNDATION TRUST :

### **Experience of implementing Carbon Monoxide screening**

The Heart of England Foundation Trust (HoEFT) is one of the largest in the country, providing maternity care across three hospitals. CO screening has now been in place for approximately two years. Experience at HoEFT has shown the following steps were useful when implementing CO screening:

- Negotiating joint funding with the commissioner to purchase CO monitors and equipping all community midwives with a monitor.
- Gaining commitment and ownership from the Head of Midwifery/Associate Head of Midwifery Directors.
- Identifying individuals to champion CO screening, providing on-going support to midwives and facilitating shared learning.
- Training maternity staff in routinely offering CO screening to all women.
- Making CO monitors available in hospital antenatal clinics, antenatal day assessment units, early pregnancy assessment units and fertility services.
- Developing resources to support discussions, including an A5 briefing sheet for midwives and patient information leaflets for women; consulting local women and other user representatives when developing the resources.
- Implementing a communications campaign, including a poster encouraging women to ask their midwife for a CO screen and information in local media.
- Arranging drop-in sessions to calibrate CO monitors every six months.
- Providing monthly feedback to managers/midwives on referral and CO screening rates.
- Amending the hospital patient database to capture electronic data on CO screening and referral rates, in order to facilitate audit.
- Engaging obstetricians via presentations at clinical risk/audit meetings and induction programmes, and encouraging them to use CO screening in clinical practice as a pregnancy risk assessment tool.

## DUDLEY :

### **Piloting methods to identify pregnant smokers**

#### Background

Dudley was part of a national pilot<sup>36</sup> to test an integrated pathway for smoking cessation in pregnancy and establish the best method of identifying pregnant smokers.

#### Implementation

As part of the pilot, all community midwives in Dudley introduced discussion, CO screening and cotinine testing during their first two appointments with women, automatically referring women with a high CO reading, and those who reported smoking, to the Dudley Stop Smoking in Pregnancy Service.

Although midwives struggled with the logistics of collecting urine cotinine samples, carrying out CO screening was embraced more positively. It gave midwives a tool to facilitate dialogue with women around smoking, and midwives did not find it too much additional work.

Dudley's Stop Smoking in Pregnancy Service played a crucial role in the pilot, not only providing support for the women and their partners/family members but also providing IT support; training for midwives; smokerlysers and tubes; and leaflets on CO.

Funding from the Department of Health's Health Inequalities Project also played an important part, helping the maternity unit to temporarily employ maternity support workers to provide a variety of support to the community midwives, including helping women to quit.

#### Results

During the first appointment with women, 21% were classified as smokers through self-reporting; 19% by CO readings; and 26% by cotinine testing.

The Stop Smoking Service not only received a 17% increase in referrals but also a 9% increase in four week quits. Some women who were referred did not set a quit date, highlighting that not all women who accept a referral will engage with the service.

#### Conclusion

Screening pregnant women for CO was found to be helpful and has been maintained. Being part of the pilot helped to shape a model of service which now includes routine CO screening by midwives throughout pregnancy; extended use of support staff; and the development of 'Guidelines for the Management of Pregnant Smokers' to ensure consistency of care and to give support to midwives and clinicians.

Women's CO screen results are now part of the community midwifery risk assessment form, which prompts the midwife to carry out CO screening and document the result, helping to highlight women most at risk.

Using CO screening has not only prompted more midwives to discuss smoking and refer appropriately but has also helped ensure the accuracy of the Smoking At Time Of Delivery (SATOD) data.

### Learning from implementing CO screening locally:

- The pilot identified that many current healthcare professionals lacked real in-depth knowledge around smoking, its effect on pregnancy, the impact on health inequalities, and the identification and interpretation of biochemical testing, highlighting the need for training of staff.
- A top down approach was essential: a change in cultural attitude amongst relevant health professionals and a change in current practice had to be negotiated and sold using the Nursing and Midwifery Council 'duty of care' angle. A review of clinical priorities was essential as a lack of staff and time resource was identified as a potential barrier to introducing routine CO screening.
- Rolling out an opt out referral pathway and the use of CO screening in pregnancy had to become ratified using a formal process with written guidelines for it to be adopted by maternity services.
- Raising the profile around the issues of smoking in pregnancy need to be kept on the quality and development agenda, highlighting and adopting new evidence or guidance as it emerges.
- Sustained local funding has been required to assure adequate training and the provision and usage of validation tools such as CO screening.
- CO screening is an important part of the risk assessment tool, which contributes to a protocol of care for pregnant smokers used by clinicians and midwives. Identifying women who are exposed to CO, from smoking or other sources, enables health professionals to give appropriate care in pregnancy.

## TRAINING

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### Background

Midwifery staff are responsible for providing the necessary support, care and advice required by women during their pregnancy. Consequently, they should possess the necessary knowledge and skills in order to allow them to feel proficient in their work with pregnant women who smoke. This includes confidence in discussing brief interventions and referrals as well as having experience in performing practical tasks such as CO screening.

However, although smoking in pregnancy is included as a component in pre-registration training for midwives, the precise makeup of this training can vary considerably between different schools of midwifery. Smoking status and its effects on maternal and foetal health constitute a fundamental area of practice and midwifery staff will be widely aware of the dangers associated with smoking in pregnancy. However, despite recognition that engaging with pregnant women about smoking is an important part of their role, it is unlikely that midwifery staff will be taught about the benefits of quitting or have training in smoking cessation. Despite these gaps in knowledge, good resources for this training currently exist, such as the National Centre for Smoking Cessation and Training (NCSCT) brief expert guide for midwifery staff as well as a specialty online training course for stop smoking practitioners, online modules on delivering very brief advice to smokers and on secondhand smoke. However, online training is not always enough. Face-to-face training, as well as the guiding influence of good role models, can be important in instilling the attitudes and behaviours required for healthcare practitioners to deliver advice on quitting smoking in pregnancy in an appropriate and effective manner.

Nevertheless, it is important to remember that healthcare provision is multi-disciplinary and women will have contact with many different healthcare professionals throughout the course of their pregnancy. Doctors, nurses, health visitors, sonographers and administrative staff each have a role to play if health professionals are to truly uphold the philosophy of “every contact counts”. As such, the level of training they receive in relation to interacting with women who smoke during their pregnancy, and their role in facilitating cessation, should reflect this. The challenge group heard from a number of experts in relation to the training of those involved with women during the course of their pregnancy who made a number of recommendations, outlined in this chapter.

### Recommendations

1. There should be implementation of the NICE guidance: all midwives, and other health professionals working with women who smoke while pregnant, should have training on smoking cessation that is appropriate to their role. This is the responsibility of maternity service managers, commissioners of stop smoking services and relevant professional bodies and organisations.
2. The Nursing and Midwifery Council should specify that mandatory education on smoking in pregnancy and brief intervention training for all midwives be provided as part of their pre-registration training and continued professional development.
3. To ensure that midwives are competent in discussing smoking with women and delivering CO screening, Health Education England should ensure that all midwives and maternity support workers undertake regular training and are adequately resourced to equip themselves to raise the issue of smoking with women.
4. Health Education England should ensure that all practitioners who assist pregnant women to stop smoking are provided with appropriate evidence based training resources that allow them to address the core competencies required in providing effective smoking cessation advice.

5. Local commissioners should ensure that all practitioners who assist pregnant women to stop smoking are sufficiently trained, achieving full NCSCT certification and completing the NCSCT specialty pregnancy online module, or training to an equivalent standard. There should also be mandatory targets for the numbers of staff trained to this level.
6. Brief intervention training should be undertaken by doctors, nurses, health visitors, administration staff, sonographers and other medical practitioners who work with pregnant women. Medical royal colleges, Health Education England, the National Centre for Smoking Cessation and Training, service managers and voluntary organisations – among others – have a role to play in promoting the uptake of this training.
7. Training courses are not enough. Service managers should ensure that there are good role models available to support colleagues through support and supervision. Less experienced staff can learn through mentoring, gaining experience in how to talk to women and interpreting different CO readings.

## MIDWIFE TRAINING

As part of a student midwife's entry to register they will receive training on issues relating to public health and health promotion which would include aspects of lifestyle choices – such as smoking and smoking cessation.

Discussing smoking and smoking cessation is considered a fundamental area of practice; students at the initial antenatal assessment will take a full medical general health and social history. The assessment will include discussions about smoking and other lifestyle issues. How the training is delivered and how much time is allocated may vary between each university and clinical setting. For example, although midwives may learn about the risks and harms associated with smoking in pregnancy, not all will receive specific training on the key issues around smoking cessation, including the benefits of quitting. Some midwives report concerns in engaging with pregnant women over smoking while others will not be trained to the standard required to effectively offer brief advice before referring. This is because pre-registration student midwives have to complete a number of competencies sufficient to achieve the Nursing and Midwifery Council proficiencies. One area which may lend itself to smoking cessation issues in terms of the midwife's contribution to enhancing the health and wellbeing of individuals could be to link smoking cessation to an essential skill.

The type of post-registration training a midwife will receive in relation to smoking in pregnancy will vary depending on the particular relevance for the midwife's role. For example, a community midwife may have a larger role in smoking cessation than a midwife working in a delivery suite. This would mean that the service priorities are made most relevant for service provision around smoking cessation.

## THE NATIONAL CENTRE FOR SMOKING CESSATION AND TRAINING :

### **Evidence based training for midwives and others**

#### Background

The National Centre for Smoking Cessation and Training (NCSCT) was established with funding from the Department of Health to establish standards of practice for Stop Smoking Services and to assess and train practitioners in an attempt to ensure that they all meet this standard. Their training resources offer a suitable case study for highlighting one example of the effective delivery of evidence-based training for local and national providers of smoking cessation. This can include healthcare professionals such as midwives.

The NCSCT has developed a Standard Treatment Programme for practitioners based on the best available evidence; and provides guidance to service managers and commissioners on the optimal configuration of their services.

There are several courses on offer, including the Training and Assessment Programme, which allows practitioners to learn the core skills required to deliver effective behavioural support; and the Very Brief Advice on Smoking module, which offers training on how to deliver very brief advice on smoking. Additionally, a specialty pregnancy module is available for individuals who have gained full NCSCT certification. This module is geared specifically towards training competencies that are effective in promoting smoking cessation in women who are pregnant. Practitioners may also complete a short online module on secondhand smoke, designed to help those who complete it to raise the issue of exposure to secondhand smoke, which may also be relevant to professionals responsible for the care of pregnant women.

#### Evidence-based training

The NCSCT has developed a method of establishing a taxonomy of behaviour change techniques used in the delivery of behavioural support; and has investigated which of these behaviour change techniques have the most evidence for effectiveness.

All of the NCSCT training and assessment programmes are based upon these evidence-based behaviour change techniques.

The NCSCT has evaluated its online and face-to-face courses and published on the effect that participation in them has on knowledge and clinical practice. The NCSCT has a strong programme of research investigating components, fidelity and delivery of behavioural support to smokers wanting to stop.

## A MIDWIFE SURVEY :

### **The attitudes, confidence and beliefs of midwives in helping pregnant women to stop smoking**

A survey of midwives employed by eight Trusts in the North East of England was undertaken between January and February 2011.<sup>37</sup> The survey's aim was to understand the attitudes and beliefs midwives have about their work with pregnant women who smoke.

Across the North East 589 questionnaires were returned, a response rate of 43%. The responses to the survey indicated that midwives felt that it is part of their professional role to engage with pregnant women about smoking, that they feel motivated to carry out the work and that they believe they have sufficient knowledge to undertake the tasks required of them.

Conversely, some midwives did not feel confident that asking a pregnant woman about her smoking behaviour would increase the likelihood of her stopping smoking. In addition, the survey revealed a lack of belief that brief advice and brief interventions to help a pregnant woman who smokes to stop are effective.

The survey also asked for responses to open questions about helping pregnant women to stop smoking. A wide range of responses were received, such as: "midwives need more specialist training on how to use CO monitors and how to approach women in order not to offend them."

As a follow up to the questionnaire, a workshop was held to review the results of the survey and to suggest ways that they could build on the areas in which midwives were already confident and find ways to support them in the areas in which they were least confident.

The key themes identified by midwives during the workshop included:

- Skills and training – suggestions about how to ensure consistent training by making smoking cessation training mandatory, on-line and to include how to use a CO monitor.
- The message – a proposal that there should be a common script of five key points that midwives use with pregnant women and a change in the language used to focus on the baby's health and development rather than its size. There was recognition that women expect midwives to discuss smoking cessation with them.
- Relationship with women – help is needed to manage the challenge to the relationship that addressing smoking may sometimes pose.
- Context and resources - it was believed that more CO monitors, more midwifery assistants and protected time would make it easier to undertake this work.

## COMMUNICATION BETWEEN PROFESSIONALS

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### Background

Since 1st April 2013, a new health and social care structure has been in place across England, with three commissioning organisations now responsible for meeting the needs of pregnant smokers:

- NHS England commission primary care services.
- Clinical commissioning groups (CCGs) commission maternity services.
- Local authorities commission stop smoking services, tobacco prevention activity and stop smoking communication.

This new landscape is complex and will require clear communication across, and within, organisations to ensure that streamlined pathways are in place to support pregnant women to stop smoking. Commissioning organisations should be clear on their individual responsibilities for reducing smoking in pregnancy, with health and wellbeing boards playing a key role in ensuring that services are joined up and meet women's needs. At a national level, Public Health England, NHS England and relevant royal colleges need to communicate the importance of reducing smoking in pregnancy, providing leadership, information and support to those working at a local level. In order to achieve this, a number of changes need to take place and these are set out in the recommendations below.

### Recommendations

1. Public Health England should identify a senior officer to champion efforts to reduce smoking in pregnancy, working across sectors to ensure that every opportunity to tackle smoking in pregnancy is taken.
2. Local commissioners should ensure that all practitioners who assist pregnant women to stop smoking are sufficiently trained, achieving full NCSCT certification and completing the NCSCT specialty pregnancy online module, or training to an equivalent standard.
3. Health and wellbeing boards should prioritise reducing the prevalence of smoking during pregnancy, ensuring that there are clear and streamlined pathways in place to identify and support pregnant smokers, and that services meet the needs of the local population.
4. Public Health England should work with royal colleges (including the Royal College of Midwives, the Royal College of Nursing and the Royal College of Obstetricians and Gynaecologists) and other professional bodies to ensure that there are national mechanisms in place to enable professionals to offer one another support and share good practice in reducing smoking in pregnancy.
5. Stop smoking services should develop close working links and cross referral pathways with third sector organisations at community level who provide on-going support and advice to young families and young women<sup>38</sup>.
6. The Smokefree Action Coalition<sup>39</sup> should consider how it can encourage action to reduce smoking in pregnancy
7. The CLear<sup>40</sup> partnership should review items in the CLear model to ensure that smoking in pregnancy is considered comprehensively across local government services and policy.
8. Offices of tobacco control, where they exist, should continue to support their region to reduce smoking in pregnancy levels by developing protocols, encouraging partnership working and sharing good practice.
9. The National Screening Committee should consider CO screening as part of its antenatal screening programme.

## COMMUNICATION WITH THE PUBLIC

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### Background

Effective communication with women and their families who smoke is a key component of reducing the prevalence of smoking in pregnancy. Many women now quit smoking at some point before, or in the early stages of, their pregnancy. However a considerable minority, particularly those who are younger and from less affluent groups, will continue to use tobacco into and throughout their pregnancy. Resources that effectively inform expectant mothers of the risks associated with smoking in pregnancy, the benefits of cessation and the help that is available are crucial in prompting quit attempts. For those pregnant women who are initially unable or unwilling to quit, providing suitable information and support is key in encouraging them to move towards a quit attempt.

There are a number of challenges associated with communicating with pregnant smokers, not least in relation to what can be a potentially difficult initial conversation between practitioners and the mother. Healthcare charities, commissioners and professional bodies have a role to play in developing innovative new ways of informing families of the risks for both the mother and her child associated with smoking in pregnancy. This is important for all pregnant smokers as many will not be willing to engage with stop smoking services and for this group, information and resources that can encourage self-help are key. Indeed, there is now good emerging evidence that self help interventions can be effective in increasing cessation rates. That said, all professionals who come into contact with pregnant women and raise the issue of smoking should be willing and able to refer them to services. This is because improving engagement with effective support of the kind provided by stop smoking services will be vital if national ambitions to lower smoking in pregnancy rates are to be met.

The challenge group heard evidence from a number of professionals with the goal of framing a consistent set of messages for women and their families about the risks of smoking and the best ways to stop. This included the Department of Health's Start4Life toolkit, which aims to facilitate discussions on quitting between midwives and pregnant mothers, as well as a campaign run by the baby charity Tommy's that uses an online resource to motivate pregnant teenagers to quit (Baby Be SmokeFree). Indeed, in the modern digital world, there is now increasing evidence that technology may have an important role to play in engaging with pregnant women, be it via online resources or via text message on a mobile phone. However, for existing interventions, where good evidence exists, the challenge group recommends that these are consistently implemented in order to ensure the best outcomes. The group made a number of recommendations relating to communicating with women and these are set out below.

### Recommendations

1. Member organisations of the challenge group in partnership with the Department of Health and Public Health England, should agree a consistent set of messages to inform professional bodies, parents, training providers, and other members of the voluntary sector on the key issues in smoking in pregnancy. The baby and parenting charities, with support from challenge group member organisations, should take a lead on producing and disseminating these messages.
2. The importance of CO screening should be communicated both to pregnant women and professionals, particularly midwives, through the development of two new resources outlining the dangers of CO. These two resources, comprising postcard size leaflets (one for women and one for professionals), should describe what different CO readings mean and what to do in the event of an abnormal reading. As part of the challenge group the Lullaby Trust, Tommy's, the Royal College of Nursing and the Royal College of Midwives have already taken a lead on their development.

3. Public Health England should build and expand upon the Start4Life brand, ensuring that all pregnant women are aware of the risks of smoking in pregnancy, the benefits of quitting, the support available to help them quit, and the importance of CO screening.
4. England needs a comprehensive, multi-agency, communications strategy to highlight the importance of stopping smoking in pregnancy, aimed at all women and their partners, as well as other members of the household. This should be developed by challenge group member organisations in conjunction with Public Health England. The strategy needs to make the best use of existing resources and, if necessary, make the case for additional funding.
5. Digital interventions should be part of the development of future communication strategies for women who smoke during pregnancy to ensure the most effective (and cost-effective) interventions are in place across England.
6. Where there is strong evidence to support an effective intervention, this should be commissioned and implemented. For example, there is good evidence that incentive reward schemes are effective in supporting women to maintain a smokefree pregnancy. This is the responsibility of Clinical Commissioning Groups, Local Authorities and local stop smoking services.
7. Where it is known that a woman is trying to conceive, health professionals and others who have contact with her should identify the woman's smoking status, offer very brief advice if she smokes, and refer her to stop smoking services.

## DIGITAL INTERVENTIONS TO SUPPORT SMOKING CESSATION

### Background

Access to the internet in the UK is now widespread, with figures from Q2 2012 indicating that 85% of adults (16 years and over) were able to log-in online.<sup>41</sup> Additionally, personal mobile use is ubiquitous, with a report from Ofcom revealing that 92% of adults owned a mobile phone in 2011.<sup>42</sup> More recently, it has been reported in a study of a representative sample of smokers in England that 70.1% of current smokers have at least weekly access to internet, and 41.6% have access to handheld computers.<sup>43</sup> The report from Ofcom suggests that this is an era of smartphone revolution, as shown not only by the rapid growth of smartphone users (currently 27% of adults and 47% of young people), but also by the change in how people think about, attach to and use these phones in everyday life.<sup>40</sup> Therefore, there is a growing interest in using digital technology as a novel way to deliver behaviour change interventions such as smoking cessation.

The shared advantages of different digital smoking cessation interventions are numerous: they are anonymous; convenient; available any time; accessible anywhere; and they provide the opportunity to reach a wider population, intervene more frequently and in real time on a relatively low cost per user (exploiting economics of scale). Possible limitations could be the digital divide, referring to the inequality between different socio-demographic groups in the access and usage of digital technology, and the lack of personal contact; thus, it might be more difficult to provide emotional and emphatic feedback to users.

## Evidence of effectiveness from the general population

Digital smoking cessation intervention programmes have been the subject of six systematic reviews and meta-analyses in recent years. It has been found that online interventions can be effective to aid smoking cessation in adults.<sup>44, 45, 46, 47</sup> The long-term effectiveness of online interventions has also been reported<sup>44</sup>, and there is some evidence that tailored online interventions might be more effective than static websites.<sup>42, 44</sup> Moreover, mobile-phone-based, text messaging programmes have been shown to increase short-term self-reported quitting.<sup>48</sup> More recently, Chen et al.<sup>49</sup> included a broad range of digital smoking cessation interventions in their systematic review and meta-analysis, and concluded that computer, internet, mobile-phone and other electronic aids increase the chance of quitting in comparison to no interventions or self-help materials.

However, there remains significant heterogeneity in quality, outcomes, effectiveness and design of the studies included in these systematic reviews and meta-analyses. There is a call for more detailed description of the development process of intervention programmes, including the underlying theory and the behaviour change techniques applied, to be able to build on findings from existing digital interventions and to compare their effectiveness.<sup>50</sup>

## Development of a digital intervention package

Professor Robert West and colleagues at University College London aim to develop and obtain preliminary evidence on effectiveness of a highly-tailored digital smoking cessation intervention package, including a website, a mobile application and a text-messaging service, for pregnant smokers. The intervention development work follows the MRC guidance for development and evaluation of complex interventions<sup>51</sup>, the developmental and feasibility pilot stages of which are aimed to be completed by the end of 2014.

StopAdvisor, an interactive, evidence-based and theory driven smoking cessation website<sup>48</sup> and its minimally adapted pregnancy version, called Mum's Quit, will provide the basis of the highly-tailored pregnancy website. Both interventions are currently being evaluated in randomized controlled trials. Principles from SmokeFree-28 (SF-28) app, developed by Professor West, will be adapted to our proposed mobile application for pregnant smokers. SF-28 encourages smokers to achieve at least 28 days smoke free and provides a quit plan, which is supported by evidence-based behaviour change techniques to target potential barriers that could undermine a quit attempt. The third component of the digital smoking cessation intervention package will be a text-messaging service. This will build on findings from Txt2stop<sup>52</sup>, an existing text-messaging service, which has been found to be effective to increase 6-month abstinence in the general population.

## INTERVENTIONS FOR SMOKING CESSATION IN PREGNANCY :

### The evidence

There are several types of interventions available to aid pregnant smokers in stopping. These broadly fall into two main categories: pharmacotherapy (i.e. nicotine replacement therapy (NRT)) and behavioural support. Behavioural support involves a range of activities aimed at maximising a smokers' motivation to quit and facilitating relapse prevention and coping. Whereas to date there is no clear evidence for the efficacy of NRT in pregnancy, and other stop-smoking medications are contraindicated in pregnancy<sup>54</sup>, there is good evidence from published randomized controlled trials (RCTs) that behavioural support can effectively help pregnant smokers to quit.<sup>55</sup> While behavioural support is an important component of face-to-face smoking cessation it is worth remembering that not all women will choose to engage in such support. For those that do not, behavioural support also forms a key element in self-help interventions, which evidence suggests can be effective.<sup>56</sup>

This summary aims to provide an overview of effective behavioural interventions, and the specific evidence-based behaviour change techniques (BCTs), for smoking cessation in pregnancy.

#### Evidence of the effectiveness of face-to-face smoking cessation behavioural support in pregnancy

##### **Cochrane Review**

A Cochrane review, including 75 RCTs of behaviour change interventions in pregnancy, evaluated the effect of such interventions on smoking behaviour and perinatal health outcomes.<sup>53</sup> Additional analyses were conducted to evaluate the differential effect of distinct types of behavioural interventions of differing intensity on outcomes. Overall, behaviour change interventions significantly aid cessation during pregnancy (~6%). These interventions significantly reduced the incidence of low birth weight, preterm birth, and increase in mean birth weight. Interventions have been increasing in intensity over recent years from 'low' (i.e. brief written advice) to 'high' (multiple personal contact support sessions + pharmacotherapy); however, intensity has not been shown to be significantly associated with intervention outcomes. Behavioural support interventions were significantly more likely to be effective if they involved incentives (such as providing shopping vouchers following validation of cessation) or took a cognitive behavioural therapy approach. Behavioural interventions incorporating biofeedback, stages of change approaches or hypnotherapy were not significantly more effective. Nonetheless, in qualitative analyses of intervention acceptability, pregnant women receiving interventions of high intensity, involving personal contact and biofeedback, were more likely to be satisfied than those receiving self-help materials. Intervention providers (i.e. midwives), expressed concern over the time taken to deliver interventions, stating lack of time, staff attitudes and perceptions of interventions as barriers to implementation.

## Evidence-based behaviour change techniques

Behavioural support interventions are complex in that they consist of multiple interacting behaviour change techniques (BCTs). It is therefore not always clear which specific BCTs have been included in effective interventions, and which should in turn form the basis for practice or future interventions. Lorencatto et al aimed to examine which specific BCTs are evidence-based, in that they are included in multiple effective behavioural support interventions in pregnancy.<sup>57</sup> From the aforementioned Cochrane Review, Lorencatto et al. identified 7 interventions that were considered to be ‘effective’ in that they increased the odds of cessation by at least 50% and differences between intervention and control conditions were significant.<sup>55</sup> The BCTs present in each of these interventions were identified and categorised using an established taxonomy of 43 smoking cessation BCTs. On average, each effective intervention contained 8 BCTs (range: 6-34). Eleven BCTs from the taxonomy were identified in at least 2 effective interventions (see Table 1). These eleven BCTs were in turn classified as being evidence-based for smoking cessation behavioural support in pregnancy.

This exercise has previously been conducted for general individual behavioural support, for which 14 BCTs were identified as evidence-based (Table 1). There was substantial overlap between the two sets of evidence-based BCTs. However, it is worth noting that two BCTs in particular emerged as evidence-based for specialist pregnancy behavioural support only: ‘provide rewards contingent on successfully stopping smoking’ and ‘advise on/facilitate the use of social support.’ This is in line with wider research literature demonstrating the effectiveness of social support and incentives in helping pregnant smokers to quit.<sup>58, 59, 60</sup>

**Table 1.** Evidence-based BCTs for specialist pregnancy and general behavioural support.

Evidence based BCTs for specialist pregnancy behavioural support	Evidence based BCTs for generic individual behavioural support
Measure expired-air Carbon Monoxide	Measure expired-air Carbon Monoxide
Facilitate relapse prevention and coping	Facilitate relapse prevention and coping
Provide information on the consequences of smoking and smoking cessation	Provide information on the consequences of smoking and smoking cessation
Facilitate barrier identification and problem solving	Facilitate barrier identification and problem solving
Facilitate action planning/identify relapse triggers	Facilitate action planning/identify relapse triggers
Goal setting	Goal setting
Assess current and past smoking behaviour	Assess current and past smoking behaviour
Assess current readiness and ability to quit	Assess current readiness and ability to quit
Offer/direct towards appropriate written materials	Offer/direct towards appropriate written materials
Advise on/facilitate use of social support	Advise on stop smoking medication
Provide rewards contingent on successfully stopping smoking	Give options for additional/later support
	Provide information on withdrawal symptoms
	Assess past history of quit attempts
	Prompt commitment from the client there and then

## A CURRENT DIGITAL INTERVENTION:

### Baby be SmokeFree

Tommy's is a charitable organisation that exists to save babies' lives by funding research into the causes and prevention of miscarriage, stillbirth and premature birth and providing pregnancy health information to parents-to-be and health professionals. They received a grant from the Department of Health to develop an innovative programme to increase the quit rate of pregnant teenagers by increasing referral rates to local stop smoking services.

As a precursor to the programme Tommy's carried out scoping work with 32 pregnant teenagers who were smokers or had quit during their pregnancy, and 60 teenage specialist midwives. This qualitative assessment gauged the teenagers' knowledge, attitudes and beliefs around the risks and issues associated with smoking in pregnancy and tested key messages around smoking and smoking cessation. Findings are summarised below:

- Teenagers know that smoking in pregnancy is dangerous but they do not understand the specific risks.
- Midwives are talking to teenagers about the dangers of smoking in pregnancy and the importance of stopping smoking.
- Midwives are not always referring their smoking clients to stop smoking services.
- Teenagers are very aware of the social stigma of smoking during pregnancy and feel guilty about their smoking.
- Teenagers do not always admit to smoking when asked.
- Teenagers believe that:
  - They could quit on their own.
  - Stop smoking services could not tell them anything new.
  - Stop smoking services could not provide the kind of support that would help them to quit.
  - Stop smoking services are judgemental and will give them a 'hard time'.

Based on these findings a computer based self-referral tool called "Baby Be SmokeFree" (BBSF) was developed. The intervention was tested at St Thomas' Hospital in London after young women had had their first pregnancy scan. Based on the PRIME theory<sup>61</sup>, this moment was seen as key as, having seen their baby for the first time, it was hoped that women might feel more motivated to quit. The tool enabled women to refer directly and confidentially to local stop smoking services following the use of a variety of media within the tool which explained through film, vox pops, animation and shorter text the implications of smoking for their baby.

The key components of the tool included:

- An initial video clip where a teenage mum “Lisa” talks about her experiences of having a baby prematurely using the message framing findings and demystifying perceptions about stop smoking services.
- Motivational messaging delivered by young women themselves through short video clips.
- Video interview with a stop smoking services advisor.
- Video interview with Helpline.
- Flash animation of progress of smoke through mother to baby.
- Self-referral option.

The pilot ran from November 2010 to March 2011, recruiting 36 young women of which, based on the national average, 16 participants were estimated to be smokers. Four of these smokers (25%) went on to refer themselves to stop smoking services.

Post trial period analysis indicated that BBSF was successful in improving the target audience's attitudes, beliefs, knowledge and understanding of the negative impacts of smoking in pregnancy, the realities of having a premature baby and the importance of quitting. Indeed, after viewing Baby be SmokeFree most smokers reported a higher motivation to quit. However, while the intervention successfully facilitated a positive shift in attitude and behavioural intention with regards to stop smoking services, participants continued to report that quitting on their own, rather than being referred to stop smoking services, was preferable.

Upon completing a short questionnaire on the intervention, reviews were found to be overwhelmingly positive. Participants found the site attractive, easy to use, relevant, and engaging. Furthermore, there was a demonstrable impact on behavioral intention, with 66% of those taking the survey indicating that they would not allow friends or family to smoke around them as a result of the video.

### Adjustments to BBSF and next steps

BBSF has been up-dated and the new version does not include a self-referral option but provides support information instead. The site is available to access for free on the internet. Furthermore, the microsite has been developed into a CD-ROM for use within a community setting by nurses and is currently being evaluated by the Family Nurse Partnership. Further research has also just begun in conjunction with University College London to understand how BBSF can be developed further to support young women through a quit attempt herself, acknowledging the message of wanting to quit alone.

## INCENTIVE SCHEMES

### Background

The Tobacco Free Futures (TFF) North West (NW) Smoking and Pregnancy Reward Scheme allocated funding to enable local areas to provide a financial incentive, in the form of high street shopping vouchers, to reward pregnant women for maintaining a smoke-free pregnancy and continuing not to smoke for a period of at least two months post-partum. The maximum incentive available to an individual woman was £240.

This regional programme aimed to prevent relapse following a successful 4-week quit attempt by adopting key elements of a trial of financial incentives for smoking cessation in pregnancy previously conducted in Oregon, USA. Participating local areas agreed to recruit women to the scheme, deliver enhanced smoking cessation support, meeting each participating woman monthly, undertake CO screening and where possible supporting the woman to recruit the assistance of a non-smoking significant other. At the time of scheme delivery the NW consisted of 24 PCTs, 20 agreed to deliver the scheme locally and nominated a project lead who participated in project-specific training.

### Outcomes

Findings from the routine monitoring element of the scheme suggest that once women were engaged (i.e. had attended their first appointment with an advisor which followed achieving a four week quit) a significant proportion were able to remain abstinent during pregnancy and beyond. CO validated quit rates at the key monitoring points for the scheme (8 and 12 weeks post quit date and then 2 months after birth) based on internal monitoring of the scheme were consistently high, see table below.

Participation:	Quit rates at key monitoring points:
516 women participated	93% (n=479) attended their 4-week quit appointment
25% (n=133) were recruited following maternity booking at 11-15 weeks	75% (n=386) were abstinent 8-weeks after setting a quit date
A further recruitment peak occurred at the 20-week scan stage	62% (n=318) were abstinent 12-weeks after setting a quit date
A number (14%, n=75) were recruited during the later stages of pregnancy	43% (n=224) were abstinent at the 2-month post-partum stage
Nearly half (48%, n=251) nominated a 'significant other' to support them	

Factors influencing cessation (indicated as very important or important)	Participants' experience of CO screening:
1. Health of the baby – 100%	1. Reassured me about the health of my baby – 93%
2. Support of stop smoking advisor – 99%	2. Reassured me I did the right thing in giving up – 83%
3. Having CO screened at each visit – 97%	3. Reassured me my health was improving – 81%
4. Own health – 96%	4. Helped me stay quit – 77%
5. Money saved by giving up – 91%	5. Not helpful – 2%
6. Significant other support – 90%	
7. High street shopping vouchers – 75%	

## Conclusions

The scheme evaluation was conducted by the University of Stirling and the UK Centre for Tobacco Control Studies. The evaluation found that both the women participants and the health professionals involved with the scheme viewed it positively in terms of engagement and motivation to sustain a quit attempt. Many women spoke of how the financial reward provided a bonus or treat that off-set some of the obstacles they faced. In contrast to the views of some stakeholders a large proportion of the women participants found having regular CO screening helped them maintain their quit attempt and provided reassurance that they made the right choice in quitting.

The study concluded that the combination of the incentive plus the support of a health professional (beyond that traditionally offered by the NHS Stop Smoking Service) was an effective combination. The scheme provides useful new evidence and information for commissioners seeking to reduce smoking in pregnancy.

## Impact of the scheme on the creation of a smokefree home

An unexpected secondary outcome of the scheme emerged when 73 (94%) of 80 women who reported living in a smoking household (where smoking was permitted in one or more rooms in the house) when joining the scheme indicated that they had made their home smoke free since participating. This suggests that in conjunction with stopping smoking, the scheme had provided women with support and information to make this important additional change, which has significant potential benefits to the health of their child and other family members.

## WHAT'S CURRENTLY AVAILABLE :

### **Start4Life/Smokefree materials**

Start4Life is an example of some of the current guidance that is available for midwives and other healthcare professionals and aims to provide them with support in talking to pregnant women and their partners about how to stop smoking. As such, it may represent a useful platform to build upon in incorporating potential future communications with women about smoking in pregnancy.

The Start4Life campaign was launched in 2010 with an initial focus on the 0-2 age group with messaging on breastfeeding, starting solid foods and activities for babies and toddlers. In 2012 the scope of the campaign was extended to include advice on maternal health, including smoking in pregnancy.

One of the leaflets contained within the Start4Life pack is a booklet on “Healthy Habits for Baby and You”. This booklet was designed to give information on the five key healthy pregnancy behaviours that form the basis of Start4Life’s messages – healthy eating, keeping active, taking supplements, stopping smoking and avoiding alcohol – and is intended as a tool for midwives and others to use when having potentially difficult conversations with women in their care. The idea for the booklet came out of research undertaken with healthcare practitioners in August 2012, who reported that they found it very helpful to have materials that effectively act as the “third person” in a conversation to make the topic feel less personal.

The packs were emailed to all heads of midwifery and were also available in around 4,500 GP surgeries in England. Around 200,000 of the Healthy Habits booklets were picked up in GP surgeries – about 91% of those provided. In a survey to evaluate the booklet, 97% of respondents found it easy to understand and 86% reported that they undertook further consultation after reading it. The Start4Life team plans to further evaluate their platform and, in doing so, it might act as a useful resource for expanding communication of some of the key messages on smoking in pregnancy, including on issues such as the importance of CO screening and the benefits of cessation.

## RESEARCH NEEDS

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There is a growing body of research on smoking and smoking cessation in pregnancy, with a number of important ongoing studies in the UK and elsewhere. In reviewing existing published evidence, however, there remain some important research gaps. These were identified by members of the Challenge group in consultation with other colleagues with research expertise in smoking cessation in pregnancy. These include:

- Research on Nicotine Replacement Therapy (NRT) use in pregnancy, including: safety and efficacy particularly of higher doses – i.e. combination therapy; greater understanding of how pregnant smokers use NRT and why adherence is low; and the development of effective interventions to increase adherence.
- Research to better understand behaviour change techniques for smoking cessation in pregnancy, particularly which types of these techniques are effective among different groups.
- Studies examining the effectiveness of different referral methods from maternity services to stop smoking services, building on research already undertaken in the UK.
- Studies focussing on teenage pregnant women and effective mechanisms to engage and support this group to stop smoking.
- Further research and pragmatic pilots on financial incentives for smoking cessation in pregnancy, including incentives with partners and social support network members, and incentives for health care providers including midwives to promote referral and provision of treatment.
- Research on cessation of smokeless tobacco products in pregnancy particularly in Black and Minority Ethnic groups.
- Studies on electronic aids for smoking cessation in pregnancy and new media interventions.
- Monitoring or audit work on a range of measurement issues related to smoking in pregnancy including, for example: the reliability of self report, pragmatic approaches to cotinine testing in clinical settings and whether the definition of low birth weight (<2.5kgs) in developed countries such as the UK should be raised.
- Research on effective interventions for partner and household members' smoking cessation.
- Further research on self-help interventions for cessation in pregnancy including: the best content for high quality written self-help materials; the optimisation of self-help digital interventions; and mechanisms to improve uptake of self-help interventions.
- Development and testing of relapse prevention interventions for smoking cessation in pregnancy, including behavioural support and NRT specifically for relapse prevention.

## WHAT NEXT?

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The Challenge Group (consisting of organisations endorsing this report) will meet again one year from the publication of this report to assess progress in relation to the issues identified by the group. This meeting will provide an opportunity to evaluate the implementation and success of the recommendations proposed in this document with a view to further improve efforts to reduce levels of smoking in pregnancy. The group will put in writing an account of the progress made in a letter to the Public Health Minister.

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## ABBREVIATIONS USED IN THE REPORT

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<b>CCG</b>	Clinical Commissioning Group
<b>CO</b>	Carbon Monoxide
<b>IFS</b>	Infant Feeding Survey
<b>NICE</b>	National Institute for Health and Care Excellence
<b>NRT</b>	Nicotine Replacement Therapy
<b>SATOD</b>	Smoking At Time Of Delivery

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  - Smoking throughout pregnancy: proportion of all mothers who smoked in the two years before they completed stage one of the survey, and who were smoking at the time of their baby's birth. This includes mothers who may have given up smoking before or during their pregnancy, but who had restarted before their birth.
  - Gave up smoking before or during pregnancy: this is the proportion of mothers who smoking the two years before they completed stage on of the survey and who gave up during this period and had not restarted before the birth of the baby

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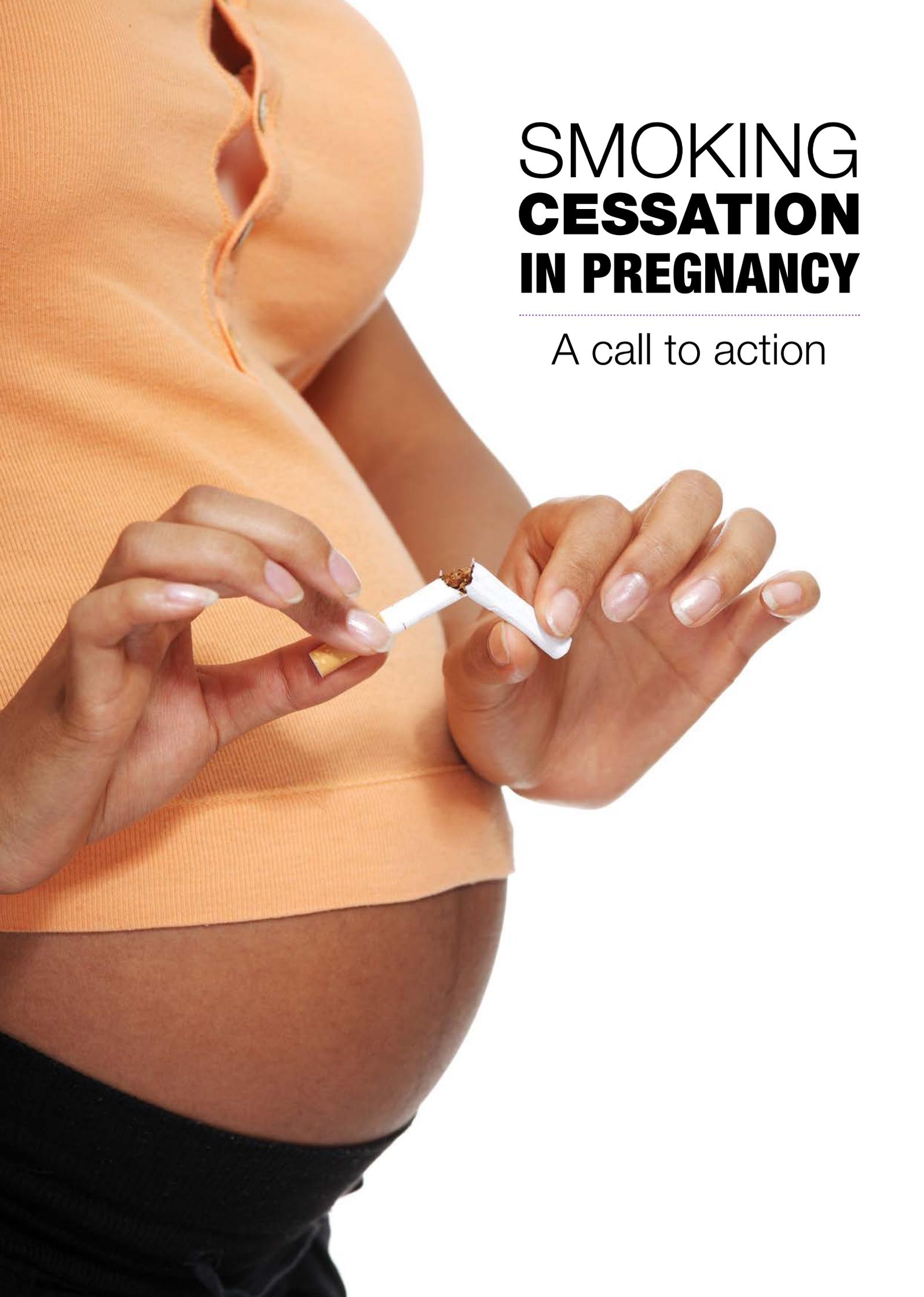
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Graphic design by [paul@WeeCreative.co.uk](mailto:paul@WeeCreative.co.uk)

A pregnant woman is shown from the chest down to the waist, wearing an orange long-sleeved top. She is holding a white cigarette with both hands, which has been broken in half. The cigarette is held between her fingers, and the broken end is visible. The background is plain white.

# SMOKING **CESSATION** **IN PREGNANCY**

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A call to action